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EXAMINER	
LEUNG, JENNIFER A	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/069,261	DURST ET AL.	
	Examiner	Art Unit	
	JENNIFER A. LEUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,4,6-15 and 21-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4,7-9 and 21-38* is/are rejected.

7)☒ Claim(s) *3,6,7,10-15 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on January 14, 2009 has been carefully considered. Claims 1, 2, 5 and 16-20 are cancelled. Claims 3, 4, 6-15 and 21-38 are under consideration.

Claim Objections

2. Claims 3, 7, 13-15 and 35 are objected to because of the following informalities:

In claim 3, it is suggested that lines 2-5 be amended to,

~~a combustion chamber;~~

a burner that provides for combustion of a fuel/oxidant mixture, having a combustion temperature above 2500 °C, within a ~~said~~ combustion chamber at a temperature below said combustion temperature;

since, as noted from Applicant's disclosure, the combustion chamber (C) forms part of the burner (1), and is not a separate element from the burner. (see FIG. 1; page 22, third paragraph). Also, "a fuel and an oxidant" (see line 14) should be changed to --said fuel and said oxidant--.

In claim 7, it is suggested that "same" (line 3) be changed to --said additional gas--. Also, it is suggested that ", preferably by mixing with fuel or oxidant before the pre-mix chamber" (lines 3-4) be deleted.

In claim 13, it is suggested that "as they are utilized for systematic packings in thermal separation methods, such as spheres or shell bodies" (see lines 2-3) be deleted.

In claim 14, it is suggested that "like a grate" (see lines 3-4) be deleted.

In claim 15, it is suggested that ", in particular the grate" be deleted.

In claim 35, line 16, "one or more or" should be changed to --one or more of--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 4, 6-15, 26-28 and 31-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, it is unclear as to the relationship between the "one or several supply lines for the fuel as well as the oxidant" (see lines 9-10) and the supply lines for "separately" adding said fuel and oxidant to the pre-mix chamber (see lines 14-16). It appears that the "one or several supply lines" should be changed to --several supply lines--, in order to enable the claimed separate tangential addition of fuel and oxidant to the pre-mix chamber.

In claim 27, it is unclear as to the relationship between "a pre-mix chamber" and "a pre-mix chamber" now recited in claim 3.

In claim 31, it is unclear as to how the "low combustion value gas supply line" could be "tangentially arranged to said mixing chamber", since the low combustion value gas supply line does not directly connect to the mixing chamber. Instead, the low combustion value gas is indirectly supplied by the low combustion value gas supply line to the mixing chamber "via said first supply line and/or said second supply line". (see lines 10-17).

In claim 35, it is unclear as to how the "low combustion value gas supply line" could be "tangentially arranged to said mixing chamber", since the low combustion value gas supply line does not directly connect to the mixing chamber. Instead, the low combustion value gas is indirectly supplied by the low combustion value gas supply line to the mixing chamber "via one

or more of said first supply line, said second supply line and said third supply line". (see lines 10-19).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 3, 7-9, 25-28 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Cull et al. (US 3,220,798).

Regarding claims 3, 7, 26 and 27, Cull et al. discloses an apparatus (see FIGs. 1, 2) comprising: a burner that provides for combustion within a combustion chamber (i.e., defined by the walls of the furnace apparatus); a material which is capable of enduring a maximum temperature that is less than the combustion temperature being provided in the combustion chamber (i.e., silicon carbide or aluminum oxide material, which defines the inner firewall **9**; see column 4, lines 20-24); one or several supply lines (e.g., feed inlet **14**) capable of supplying fuel and oxidant to the combustion chamber; at least one additional supply line (e.g., second inlet **15**) capable of supplying a low combustion value gas to the combustion chamber; and a pre-mix chamber (i.e., within a portion of the annular space **10**) that allows for mixing of fuel and oxidant, wherein fuel and oxidant are added to the pre-mix chamber by means of tangentially arranged supply lines, and wherein the additional gas is also supplied to the pre-mix chamber (see column 2, lines 28-68).

Regarding claim 8, the size of a lateral surface of a side wall of the pre-mix chamber (e.g

as defined by firewall **9**) in proportion to the volume of the pre-mix chamber **10** appears to be sufficient to accommodate any free energy from the detonation of gases in the pre-mix chamber.

Regarding claim 9, the pre-mix chamber **10** is capable of being cooled, e.g., by supplying a fluid of reduced temperature via the supply lines **14**,**15**.

Regarding claim 25, Cull et al. discloses an apparatus (see FIGs. 1, 2) comprising: a combustion chamber in which a material is provided which endures a maximum temperature (i.e., silicon carbide or aluminum oxide material, which defines the inner firewall **9**; see column 4, lines 20-24), the combustion chamber having an inlet and an outlet; a pre-mix chamber (i.e., a portion of the annular space **10**, at the region below the upper level of feed inlet **14**) disposed upstream from and in communication with the inlet to the combustion chamber; one or more separate supply lines (e.g., feed inlet **14**) in tangential communication with the pre-mix chamber **10** and capable of supplying at least one of fuel and an oxidation agent to the combustion chamber; and an additional supply line (e.g., second inlet **15**) capable of supplying a low combustion value gas supply to the pre-mix chamber **10** (see column 2, lines 28-68).

Regarding claims 28 and 30, the apparatus of Cull et al. meets the claim, since the synthesis of hydrochloric acid is considered intended use, and the fuel and oxidation agent are not considered elements of the apparatus. In any event, Cull et al. discloses that the apparatus may be used for the synthesis of hydrochloric acid from a chlorine containing compound and hydrogen (see column 3, line 28 to column 4, line 13).

Instant claims 3, 7-9, 25-28 and 30 structurally read on the apparatus of Cull et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 21, 24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cull et al. (US 3,220,798).

Regarding claims 21 and 24, Cull et al. discloses an apparatus (see FIGs. 1, 2) comprising: a combustion chamber (i.e., defined by the outer wall of the furnace apparatus); a material which endures a maximum temperature lower than a combustion temperature of a material within the apparatus (e.g., silicon carbide or aluminum oxide material, which defines the inner firewall **9**, see column 4, lines 20-24; or mullite, alumina and zirconia material, which defines the outer firewall, see column 4, lines 14-29); at least one supply line (e.g., feed inlet **14**) in communication with the combustion chamber and capable of supplying fuel and an oxidation agent to the combustion chamber; and an additional supply line (e.g., second inlet **15**) capable of supplying a low combustion value gas to the combustion chamber to mix with the fuel and oxidation agent (see column 2, lines 28-68).

Cull et al. does not disclose a length of less than one meter for the apparatus. However, it

has been held that changes in size/proportion are obvious. See MPEP 2144.04. Cull et al. further disclose that the desired heat recuperation can be obtained "by adding height to or by increasing the diameters of the furnace's outer and inner walls," (column 4, lines 20-30). Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select a suitable length for the Cull et al. apparatus in order to obtain the desired level of heat recuperation, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Regarding claim 29, the modified apparatus of Cull et al. meets the claim, since the synthesis of hydrochloric acid is considered intended use, and the fuel and oxidation agent are not considered elements of the apparatus. In any event, Cull et al. discloses that the apparatus may be used for the synthesis of hydrochloric acid from a chlorine containing compound and hydrogen (see column 3, line 28 to column 4, line 13).

6. Claims 4, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cull et al. (US 3,220,798) in view of Benson et al. (GB 2 159 137).

Cull et al. is silent as to a combustion product from the combustion chamber being introduced, at least in part, via a supply line back to the combustion chamber. Benson et al., however, teaches the provision of a supply line **66** for supplying a combustion product back to the combustion chamber **14**. The supply line **66** is also in communication with a heat exchanger (i.e., direct heat exchange at the wash separation station **60**). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a supply line for introducing a combustion product back to the combustion chamber in the apparatus of Cull et al., because such would allow for reprocessing of any compound which has not been dehalogenated,

as taught by Benson et al. (see page 2, lines 44-48).

Allowable Subject Matter

7. Claims 6 and 10-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims (and corrected for the objections, specified above).

The prior art does not disclose or adequately suggest the claimed apparatus, wherein the fuel and oxidant are added to a pre-mix chamber separately by means of tangentially arranged supply lines, and said pre-mix chamber further includes static mixing elements, so that in the direction towards the combustion chamber, the flow velocity component of the mixture is greater in the pre-mix chamber than the flame velocity in the combustion chamber.

In the addition, the prior art does not disclose or adequately suggest the claimed apparatus, wherein the fuel and oxidant are added to a pre-mix chamber separately by means of tangentially arranged supply lines, and the material in the combustion chamber comprises a porous material with inter-connected hollow spaces suitable in size for flame development.

8. Claims 31-34 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The prior art does not disclose or adequately suggest the claimed apparatus, wherein a combustion chamber containing said first and second porous materials is provided in combination with a mixing chamber disposed upstream from and in communication with the inlet to the combustion chamber; said apparatus further comprising a first supply line that feeds a fuel directly into said mixing chamber, a second supply line that feeds an oxidation agent directly into said mixing chamber, and a low combustion value gas supply line that supplies a low

combustion value gas to said mixing chamber via the first supply line and/or the second supply line; said first and second supply lines being tangentially arranged to said mixing chamber.

9. Claims 35-38 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The prior art does not disclose or adequately suggest the claimed apparatus, wherein a combustion chamber containing first and second porous materials is provided in combination with a mixing chamber disposed upstream from and in communication with the inlet to the combustion chamber; said apparatus further comprising a first supply line that feeds a fuel directly into said mixing chamber, a second supply line that feeds an oxidation agent directly into said mixing chamber, a third supply line that feeds a third gas stream directly into the mixing chamber, and a low combustion value gas supply line that supplies a low combustion value gas to said mixing chamber via one or more of said first supply line, said second supply line, and said third supply line; said first, second and third supply lines being tangentially arranged to said mixing chamber.

Response to Arguments

10. Applicant's arguments field January 14, 2009 have been considered but are moot in view of the new ground(s) of rejection, necessitated by amendment.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797